Refurbishment and
Museum Installation

for the

LUNAR EXCURSION MODULE SIMULATOR

NATIONAL HISTORIC LANDMARK

National Aeronautics and Space Administration
Langley Research Center
Hampton, Virginia

DESCRIPTION OF

UNDERTAKING EFFECTS

AND MITIGATION MEASURES

Attachment C
8 Pages

ATTACHMENT C

DESCRIPTION OF THE UNDERTAKING EFFECTS

AND MITIGATION MEASURES

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ATTACHMENT C

REFURBISHMENT EFFECT

The LEMS remains are to be partially restored and totally refurbished regarding appearance. Partial restoration is the objective because there is no need to restore the craft to flying capability. Replacement or replica components are to be installed or attached. Original parts have been cleaned and are to receive original finish or color.

ATTACHMENT C

EXHIBIT EFFECT

The refurbished LEMS is to be put on permanent display in the Virginia Air and Space Center and Hampton Roads History Center. The following pages are provided to convey the character of the display in which LEMS plays a part.

VIRGINIA AIR AND SPACE CENTER
AND HAMPTON ROADS HISTORY CENTER

The Virginia Air and Space Center and Hampton Roads History Center is a major cultural and educational facility to be built in Hampton, Virginia. The facility will become the home of significant collections of artifacts related to the Hampton Roads region's history. It will contain displays illustrating the impact of regional exploration and depicting the theme of the oldest continuous English-speaking settlement in America. And it will illustrate the important contributions made to the aeronautical and space program. The Hampton Roads area was the first home for English explorers is 1610 and the first home for the U.S. space program in the 1960's.

The theme for the Virginia Air and Space Center will be "From the Sea to the Stars." The Hampton Roads region has been the site of significant advances in aeronautical research. The Langley Research Center was established in 1917. As America's preeminent aeronautics laboratory, the Center has developed concepts and made discoveries that have affected the shape of all aircraft since 1920. The role of Langley in shaping flight is only one of the topics to be covered in the Center's exhibits.

Over a dozen aircraft will be on display in the Center's main gallery, including restored aircraft from the National Air and Space Museum (NASM) and the U.S. Air Force. The restored "Aerodome," on loan from NASM, will be the focal point for exhibits concerning the early history of the Langley Memorial Aeronautical Laboratory. The main gallery will also house a full-size model of a Space Station Freedom crew module.

Achievements in space exploration will highlight the Virginia accomplishments for NASA. Project Mercury, and the seven original astronauts, was based in Hampton. Pioneering research and testing for docking systems and the concept for lunar orbit rendezvous was initiated at NASA Langley Research Center (LaRC). The NASA LaRC also managed the lunar orbiter and the Viking (-to-Mars) project. Artifacts which will be displayed in the new facility include the Apollo 12 command module, a test version of the lunar lander, engineering models of the lunar orbiter and the Viking lander, and a Mercury spacecraft flown twice at Wallops Island to test safety systems.

On the following page is a sketch depicting the exhibit area of the lunar landscape with the Lunar Excursion Module Simulator (LEMS). The LEMS is being refurbished by high school vocational students attending the New Horizons Technical Center, located on Butler Farm Road in Hampton, Virginia.

Hampton's historical downtown waterfront will be the future site of the Virginia Air and Space Center and Hampton Roads History Center. Both the NASA LaRC and the Smithsonian NASM are involved in the development of the Air and Space Center. The 100,000-square-foot structure is being designed by the internationally renowned architectural firm, mitchell/giurgola of New York and Philadelphia in partnership with the local fiem of Rancorn, Wildman, Krause, and Brezinski. The museum's exhibit designers are Krent/Paffett Associates of Boston.

NASA

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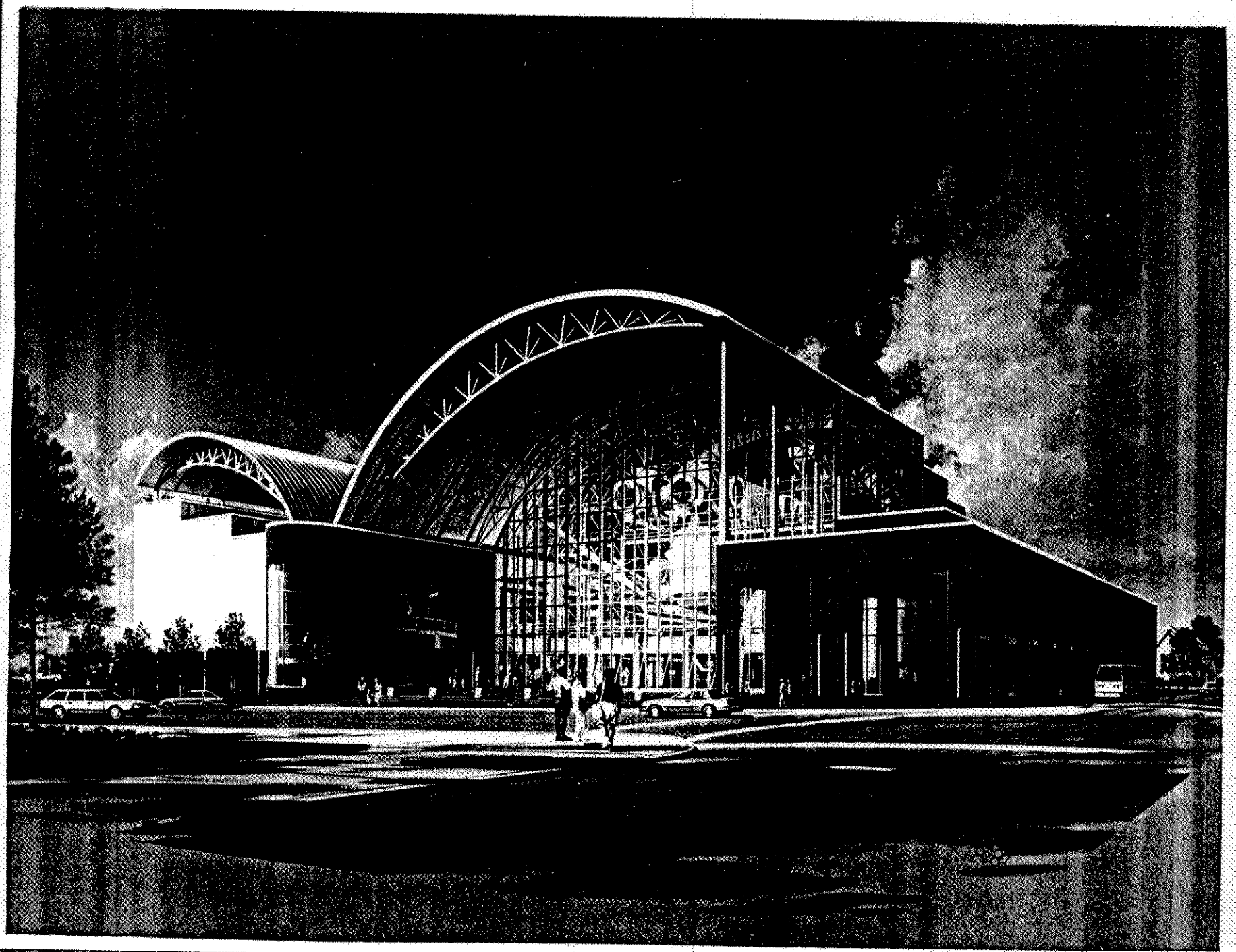

UPDATE

Virginia Air and Space Center
Hampton Roads History Center

WINTER, 1990

ISSUE 5

Director Appointed for Virginia Air and Space Center and Hampton Roads History Center

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Ralph T. Johnston is the newl appointed executive director of t Virginia Air and Space Center Hampton Roads History Center. appointment was announced by Th P. Chisman, president of the mu board of directors.

As its first executive director, Joh charged with the overall manag the center, providing leadersh creation and design of ex developing programs. He hiring staff for the center wh in 1992.

The son of native Virgi grew up in the Marylar suburbs of Washington attended public schools lifelong interest in fli career began in 1975 Institution Nation Museum where h volunteer docent a made responsibl planetarium and acted as a con Museum of Sc Metropolitan has served Museum of three years

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Lunar Module Simulator Under Restoration for New Center

This past fall marked the beginning of an exciting new project for students at New Horizons Technical Center's Hampton location, a project which, upon completion, is slated to be a cornerstone exhibit for the Virginia Air and Space Center and Hampton Roads History Center. The Apollo Lunar Excursion Module simulator was transported from NASA's Langley Research Center to the New Horizons site on Butler Farm Road where advanced students will restore the historic landmark and prepare it for display at the new facility.

The New Horizons students will work on the project under the auspices of Langley Research Center, the National Historic Landmarks Commission and the Virginia Air and Space Center. A restoration advisory committee consisting of NASA employees and a liaison officer from the center will oversee the restoration and monitor its progress. New Horizons also has appointed an advisory committee of administrators and instructors which will interact with the NASA committee.

The students will work from original photographs and blueprints of the simulator and learn the engineering design and construction principles of the Lander from NASA technicians and engineers who worked on the project. The simulator was built in 1965 at NASA's Langley facility and was used to train Neil Armstrong, Edwin "Buzz" Aldrin and 22 other astronauts. The simulator enabled the astronauts to practice piloting problems they would encounter in the last 150 feet of descent to the surface of the moon.

The lunar landing facility at Langley was designated a National Historic Landmark by the National Park Service in 1985. The restoration of the simulator is expected to take approximately two years.

New Horizons Technical Center offers vocational technical courses to students from six area school districts and is one of the state's four Governor's schools for gifted science students. Those who will have the opportunity to work on the Apollo project include students in electronics, welding, metal fabrication, drafting, physics, biology and chemistry.

NHTC Director Dr. Ralph W. Johnson says of the project, "We get to use it as an incentive. Only our best students will work on it. We view it as an academic tool, an incentive tool and a recruitment tool. After all, there is a sense of history about it."

The technical center was adopted by NASA in 1984 as part of President Reagan's "Adopt-a-school" program. New Horizons Principal Dr. Patrick M. Konopnicki says the school's partnership with NASA is an important and meaningful one and that the technical center's location near NASA "has been an asset for both students and faculty at the center. The partnership provides New Horizon students with challenging state-of-the-art experiences through association with NASA scientists, engineers and technicians. These experiences span the spectrum, including both gifted and vocational-technical programs."

Left to right, top row: Bruce Owens, Eric Scott; bottom row: Dr. Ralph W. Johnson, Wyatt Percell, Jerome Barnett and Michael Shelley.

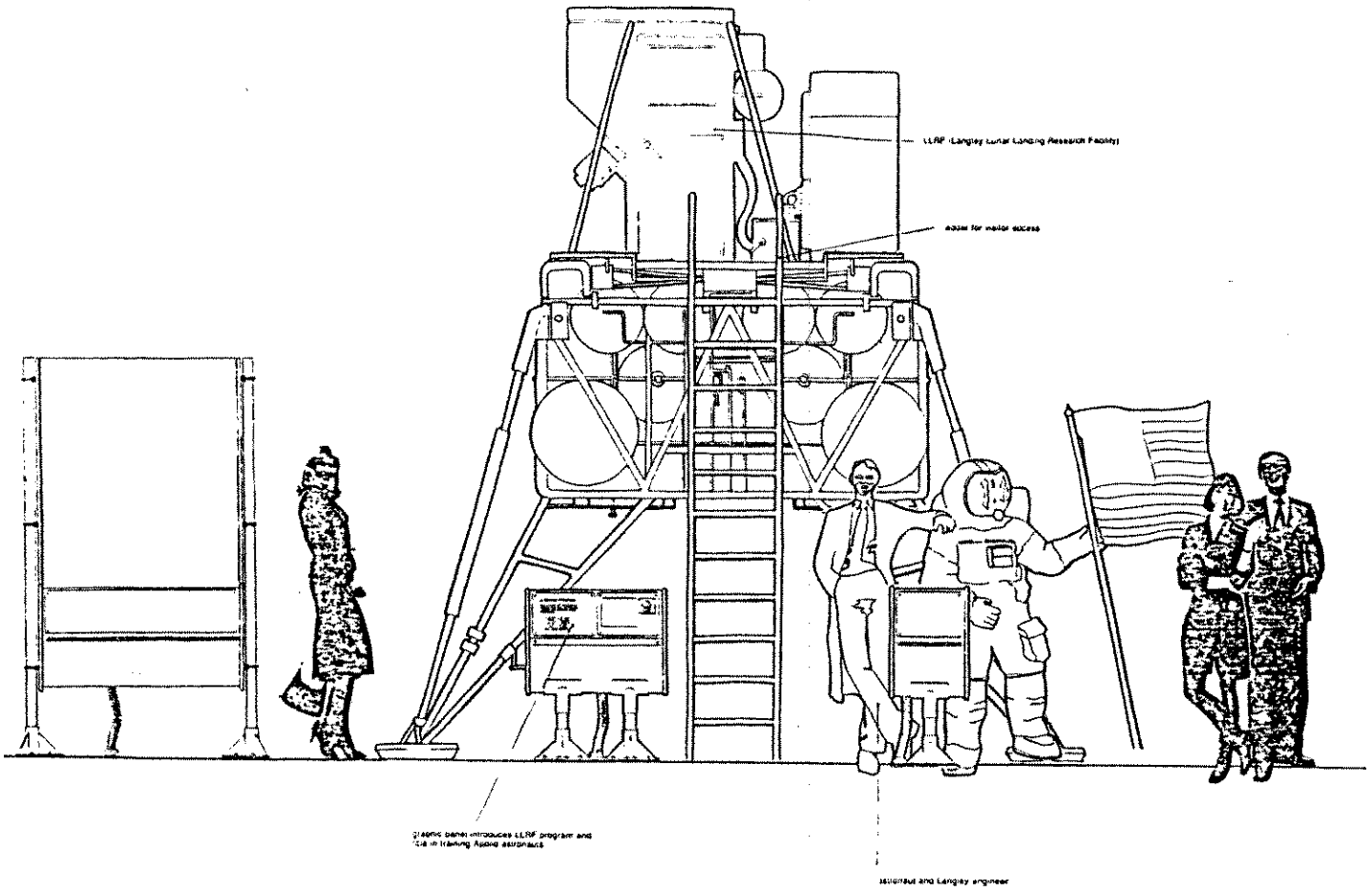
Virginia Space Grant Receives NASA Funds

Governor Gerald L. Baliles announced on September 21, 1989 that the Virginia Space Grant Consortium has been selected by the National Aeronautics and Space Administration to receive funding under NASA's new National Space Grant College and Fellowship Program. Each designated college and consortium will have received $75,000 by the end of 1989. In subsequent years, each designee will receive up to $225,000 per year.

The Virginia Space Grant Consortium is one of only 17 universities and consortia in the nation to be chosen for such funding.

The Virginia Space Grant Consortium includes among its members The University of Virginia, Hampton University, The College of William and Mary, Old Dominion University, and Virginia Tech. Serving on the Consortium's advisory group along with the representatives of these five higher education institutions are delegates from The Virginia Air and Space Center and Hampton Roads History Center, The Science Museum of Virginia, Virginia's Center for Innovative Technology, the Virginia Department of Education, and the state Chamber of Commerce. This advisory group will play a key role in developing the Consortium's programs.

When notified of NASA's decision, Governor Baliles said, "NASA's selection of the Virginia Space Grant Consortium to participate in this program underscores Virginia's commitment to space research and technology. This designation will enable our institutions of higher learning to provide additional educational opportunities so that we may strengthen our technological workforce and continue to demonstrate leadership in the development of aerospace and aeronautics industries."



1 Lunar Landscape
Elevation 1" = 1'0"

Virginia Air and Space Center

Hampton Roads History Center